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ABSTRACT

This study investigated the dimensions of sex role orientation measured by the revised Bem Sex Role Inventory (BSRI; S. Bem, 1974) and the revised Personal Attributes Questionnaire (PAQ; J. Spence, R. Helmreich, and J. Strapp, 1975). Participants were 651 undergraduates in introductory psychology courses. The sample was approximately 50% male and 50% female. Overall, items from the two measures formed six distinctive factors. Findings of the study indicate that masculinity/femininity measured by the BSRI and the PAQ have more traditional dimensions, such as independent, confident, and aggressive under masculinity, and relations, expressive, and emotional under femininity. A redefinition of sex role orientation is a possible implication of this study. (Contains 4 tables and 14 references.) (SLD)

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Running head: BSRI AND PAQ

A Factor Analysis of the Bem Sex Role Inventory and the Personal Attributes Questionnaire

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A Factor Analysis of the Bem Sex Role Inventory and the Personal Attributes Questionnaire

The nature and dimensions of masculinity/femininity have been the objectives of many research studies of sex role orientation. Since Constantinople's (1973) contention that masculinity/femininity may be orthogonal and multidimensional, the Bem Sex Role Inventory (BSRI; Bem, 1974) and the Personal Attribute Questionnaire (PAQ; Spence, Helmreich, & Strapp, 1975) have been widely used to measure these operationally independent constructs. Appropriate to their popularity, the construct validity of the two measures have been repeatedly examined by various researchers (e.g., Gaa, Liberman, & Edwards, 1979; Marsh, 1985; Blanchard-Fields, Suhrer-Roussel, & Hertzog, 1994).

The most common approach to construct validation of the BSRI or the PAQ has been an exploratory factor analysis. Regarding the factor structure of the BSRI, numerous studies reported various number of factors, ranging from two to eleven (see Bryant & Fuqua, 1998). The most frequently recurring factors across studies are one feminine factor and two masculine factors. Bryant and Fuqua reported that typically a feminine factor reflects affective or relational aspect of sex role orientation. Some example items loading on a feminine factor include warm, tender, and eager to soothe hurt feelings. Masculine factors, on the other hand, reflects instrumental (e.g., defends beliefs, assertive, willing to take risks) and autonomous (e.g., self-reliant, self-sufficient, individualistic) aspect of sex role orientation. Regarding the factor structure of the PAQ, some factor analytic studies produced a two-factor solution-expressive and instrumental- (e.g., Cota & Fekken, 1988; Spence & Wilhelm, 1981). Based on the results of these studies, Spence asserts that the items on the PAQ are more homogenous than the items on the BSRI. On the other hand, other studies reported a multifactor solution for the PAQ (e.g.,

Antill & Cunningham, 1982; Gaa, Liberman, & Edwards, 1979).

Results regarding what each of the two instruments measures and ultimately the dimensions of sex role orientation, however, are inconclusive. Bem (1981a) asserts that the BSRI measures masculinity/femininity or instrumentality/expressivity, depending on whether a person is sex-typed or not. The PAQ, according to Spence (1991), measures narrower personality traits such as instrumentality and expressivity. Some (e.g., Spence, 1991) suggest that both the BSRI and the PAQ measure the same constructs (such as instrumentality/expressivity), and that masculinity and femininity may be higher-order constructs with each having its own subconstructs (see Blanchard-Fields, Suhrer-Roussel, & Herzog, 1994; Marsh, Antill, & Cunningham, 1989).

Although the factor structure of the BSRI and the PAQ have been examined in many studies, those were conducted separately on each of the measure. No study to date has simultaneously factor analyzed the combined items of both the revised BSRI and the revised PAQ. The current study was conducted to further investigate the dimensions of sex role orientation measured by both the revised BSRI and the revised PAQ. As was suggested by Constantinople (1973), combined items from both measures were simultaneously factor analyzed in an attempt to increase our understanding of the dimensions of sex role orientation.

Methods

Participants

Participants were undergraduate students (N = 651) enrolled in introductory psychology courses at a large Midwestern university. The ethnic group composition was Caucasian (80%), Asian (10%), Native American (5%), African American (3%), and Hispanic (2%). The sample was approximately 50 % male and 50 % female. The participants voluntarily completed the BSRI and the PAQ and received extra credit for their participation.

Instruments

Bem Sex Role Inventory is a self-report measure on a 7-point Likert-type scale. The short form consists of 30 items yielding two subscale scores (M and F). Of the 30 items, ten items are used as fillers. The items on the masculine subscale reflects characteristics such as independence, competitiveness, and aggressiveness, whereas, the items on the feminine subscale reflects characteristics such as dependence, acquiescence, and compassion (Bem, 1981). The short form is reported to have higher reliability than the original form, ranging from .84 to .87 from different samples (see Bem, 1981b). The coefficient alphas observed from the sample of this study were .83 for the BSRIM and .90 for the BSRIF subscales, respectively.

Personal Attribute Questionnaire is also a self-report measure on a five-point Likert-type scale. The short form consists of 24 items yielding three subscale scores (M, F, and M-F). The M subscale reflects self-assertive and instrumental characteristics, and the F subscale reflects interpersonally-oriented expressive characteristics. The M-F subscale reflects both instrumental and expressive characteristics. Spence (1986) contends that the short form is "conceptually purer" than the original, and reported reliability coefficients of .85, .82., and .78 for the M, F, and M-F subscales, respectively. The coefficient alphas obtained from the sample in this study were .77, .77, and .53, for the M, F, and M-F, respectively.

Results and Conclusion

First-Order Factor Structure. Nine factors with eigenvalues greater than 1.0 were initially extracted by performing principal axis factor analysis on the correlations of 44 items. The nine factors accounted for approximately 58% of the total variance. A visual inspection of the scree plot and cumulative percentage of the variance accounted for suggested that five to seven may adequately represent the sex role factor structure. For each of the factor solution, from five

to seven, both orthogonal (Varimax) and oblique (Oblimin) rotations were used. A six-factor oblique solution, with delta set at -2 (moderately correlated), was selected to best represent the structure of the 44 sex role items and the retained factors were conceptually meaningful (see Table 1 and 2). Forty-three items loaded on the empirical factors with loadings of .40 or greater criterion. The six factors accounted for approximately 51% of the total variance and they were named Expressive, Confident, Rational, Relational, Dependent, and Aggressive. As can be seen in Table 2, the BSRIM, BSRIF, PAQM, and PAQF subscales were reasonably well replicated in their respective form in matching factors. However, a considerable number of items loaded on multiple factors simultaneously, thus suggesting a lack of distinctive theoretical dimensionality. The observed correlation coefficients between the subscales and the retained factors (see Table 3) further indicated that each of the subscales loaded on more than one empirical factor, indicating that the subscales of the two measures are not independent.

Second-Order Factor Structure. The intercorrelations among the six first-order factors (ranging from .03 to .58) and the lack of independence of the subscales suggested that there maybe possible higher-order factors that could shed light on the nature of sex role orientation (Gorsuch, 1983). Accordingly, second-order factors were extracted by performing a principal axis factor analysis with an oblique rotation (Oblimin, delta = -2), yielding a two factor model. The two higher-order factors were cogent and named Masculine and Feminine. As expected, the Masculine factor reflected independent, confident, and aggressive characteristics (See Table 4). The Feminine factor, on the other hand, reflected relational, expressive, and emotional characteristics.

Discussion

Overall, items from the two measures formed six distinctive factors. Nine out of ten

BSRIF items loaded on a feminine factor which reflects expressivity and compassion. Five of the ten BSRIM items loaded on a masculine factor, which reflects independence. This factor was named 'Dependent' due to the negative correlation between the items and the factor. The other five BSRIM items loaded on another separate factor which reflects aggressiveness or dominance. With regard to the PAQ, six of the eight PAQF items formed a feminine factor which exhibits relational characteristics. Six of the eight PAQM items formed a masculine factor which reflects confidence. Five of the eight PAQMF items (these represent desirable traits for both sex) formed a factor which reflects emotionality. This factor was named 'Rational' since the items correlate negatively with the factor. These findings suggest that each instrument measures distinctive, separate constructs.

Yet a close inspection of the factor matrix also seems to suggest that some of the traits measured by both instruments are quite similar and correlated. One evidence is that four BSRIF items loaded on the same factor (Rational) along with the five PAQMF items. Eight BSRIF items also loaded on the Relational factor along with six PAQF items. Another evidence of the relatedness of the two instruments is the correlations among the factor scores and the subscale scores. Each of the BSRIM and the PAQM subscale scores correlated significantly with those factors reflecting masculine traits. Likewise, the BSRIF and the PAQF subscale scores were significantly correlated with the three feminine factors. This pattern was crystallized in the clear second-order factor structure in which two clear higher-order factors (Masculine and Feminine) emerged.

There has not been an agreement in the nature and dimensions of masculinity/femininity. While some researchers express a more traditional view of masculinity/femininity as personality traits based on a conceptual definition of M/F (see Blanchard-Fields, et al., 1994; Marsh et al.,

1989), some others view M/F as broader constructs which also include nontraditional dimensions, such as behavior, physical appearance, or interest based on lay persons' definitions of M/F (see Helgeson, 1994). The findings of this study indicate that masculinity/femininity measured by both the BSRI and the PAQ have more traditional dimensions, such as independent, confident, and aggressive under masculinity, and relational, expressive, and emotional under femininity. One theoretical implication drawn from this study is related to a redefinition of sex role orientation. Considering its significant impact on human behavior, reoperationalizing sex role orientation by a clear definition and a reflection of societal and cultural change is of the utmost importance.

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Table 1

Variance Associated with the Rotated Factors (N = 651)

Factor	Eigenvalue	% of Variance	Cum %
F1	8.9	20.2	20.2
F2	7.0	15.8	36.0
F3	2.2	4.9	40.9
F4	1.7	3.9	44.8
F5	1.3	3.0	47.8
F6	1.2	2.8	50.6

Table 2

Rotated Oblique Factor Structure and Pattern Matrix for the First-Order Factors (N=651)

Item	Expressive	Confident	Rational	Relational	Dependent	Aggressive
BSRIF Compassionate	.77 (.64)		-.43	.50		
BSRIF Tender	.72 (.56)		-.48	.53		
BSRIF Warm	.72 (.57)			.58		
BSRIF Gentle	.68 (.50)		-.40	.58		
BSRIF Sensitive to others' needs	.67 (.49)			.58		
BSRIF Affectionate	.66 (.59)		-.41			
BSRIF Eager to soothe hurt feelings	.64 (.52)			.48		
BSRIF Understanding	.63 (.45)			.60 (.43)		
BSRIF Sympathetic	.62 (.45)			.54		
PAQM Self-confident		.65 (.56)				
PAQM Never gives up		.61 (.51)				
PAQM Feels superior		.58 (.51)				
PAQM Competitive		.51 (.42)				
PAQM Make decisions easily		.50 (.43)				
BSRIM Have leadership abilities		.49 (.42)			-.40	.46
PAQM Stands up well under pressure		.46 (.45)				
PAQMF Never cries			.68 (.61)			
PAQF Emotional			-.68 (-.65)			
PAQMF Feelings not easily hurt			.66 (.56)			
PAQMF Little need for security			.53 (.46)			
PAQMF Not at all excitable in major crisis			-.51			
PAQMF Indifferent to others' approval			.41			
PAQF Gentle			-.40			
PAQF Understanding with others	.42			.71 (.64)		
PAQF Kind				.67 (.62)		
PAQF Warm in relations with others	.40			.57 (.40)		
PAQF Helpful to others				.55 (.57)		
PAQF Aware of others' feelings				.51 (.40)		
PAQF Able to devote to others				.44		
BSRIF Love children				.42		
BSRIM Independent					-.79 (-.82)	
PAQM Independent					-.68 (-.75)	
BSRIM Willing to take stand		.48			-.56	.42
BSRIM Assertive					-.48	.47
BSRIM Willing to take risks					-.44	
BSRIM Defend my own belief					-.42	
BSRIM Aggressive						.77 (.74)
BSRIM Dominant						.72 (.65)
PAQMF Aggressive						.67 (.59)
BSRIM Forceful						.63 (.63)
PAQMF Dominant						.49 (.40)
BSRIM Strong personality					.45	.48
PAQM Active		.40				.40

Note 1. Only loadings greater than or equal to .40 are presented.
Note 2. Factor pattern coefficients are presented in the parentheses.

Table 3

Correlations of Factors and Subscales (N = 651)

Factor Subscale	Expressive	Confident	Rational	Relational	Dependent	Aggressive
BSRIM	.23**	.56**	.24**	.03	-.75**	.86**
BSRIF	.93**	-.02	-.53**	.77**	-.04	-.11**
PAQM	-.05	.90**	.33**	.11**	-.65**	.49**
PAQF	.60**	.09*	-.61**	.87**	.00	-.24**
PAQMF	-.26**	.47**	.69**	-.26**	-.48**	.53**

Table 4

Rotated Oblique Factor Structure and Pattern matrix for the Second-Order Factors (N = 651)

Factor	Masculine	Feminine
Dependent	-.75 (-.75)	
Confident	.66 (.66)	
Aggressive	.59 (.58)	
Relational		.81 (.81)
Expressive		.73 (.73)
Rational		-.52 (-.50)

Note 1. Factor pattern coefficients are presented in the parentheses.